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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,243	02/03/2004	Chad A. Cobbley	MICS:0078-4	2594

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03/26/2007

EXAMINER

PARKER, JOHN M

ART UNIT

PAPER NUMBER

2823

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No. 10/771,243	Applicant(s) COBBLEY ET AL.	
	Examiner John M. Parker	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/3/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claim 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The term die stack inherently implies that at least two semiconductor dies are present.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 8, 9 and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Pedersen et al. (US Pat. #5675180).

Regarding claim 1, Pedersen teaches a method of forming a semiconductor package comprising the acts of:

Picking a die stack[fig. 11, 112] from a temporary holding surface [fig. 9, 116];

and

Placing the die stack on a substrate [fig. 12, 150].

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Regarding claim 2, Pedersen discloses the method, as set forth in claim 1, comprising the act of curing the die stack before the act of picking a die stack [column 9, lines 37-39].

Regarding claim 3, Pedersen teaches the method, as set forth in claim 1, comprising the act of testing the die stack before the act of picking a die stack [column 8, lines 50-52].

Regarding claim 6, Pedersen discloses the method, as set forth in claim 1, wherein the act of picking the die stack from a temporary holding surface comprises the act of picking the die stack from a tray [fig. 9, 116, the alignment fixture can be considered a tray].

Regarding claim 8, Pedersen teaches the method, as set forth in claim 1, wherein the die stack comprises at least two semiconductor die [column 9, lines 26 and 27, 6 dies].

Regarding claim 9, Pedersen discloses the method, as set forth in claim 1, wherein the die stack comprises at least three semiconductor die [column 9, lines 26 and 27, 6 dies].

Regarding claim 18, Pedersen teaches the method as set forth in claim 1, comprising the act of using the die stack on the substrate to form an integrated circuit package [column 1, lines 5-25, the Pedersen patent is directed at creating high density integrated circuit packages].

Regarding claim 19, Pedersen teaches the method as set forth in claim 18, comprising the act of electrically coupling the integrated circuit package to a processor form an electronic system [column 12 lines 1-10].

Regarding claim 20, Pedersen teaches the method, as set forth in claim 1, wherein at least one die in the die stack comprises a memory die [column 4, lines 5 and 6]

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4,5,7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pedersen et al. (US Pat. #5675180).

Regarding claim 4, Pedersen fails to teach the temporary holding surface is a tape reel, however the use of tape reels are common in die transfer processes. The examiner takes official notice that tape reels were known to be used as a temporary holding surface of a die stack at the time of applicant's invention.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of what is well known in the art into the method of Pedersen by using a tape reel for holding a die stack. The ordinary artisan would have

been motivated to modify Pedersen in the manner set forth above for at least the purpose of using a well known and established method of holding a die stack.

Regarding claim 5, Pedersen fails to teach the temporary holding surface is a gel pack, however the use of gel packs are common in die transfer processes. The examiner takes official notice that gel packs were known to be used as a temporary holding surface of a die stack at the time of applicant's invention.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of what is well known in the art into the method of Pedersen by using a gel pack for holding a die stack. The ordinary artisan would have been motivated to modify Pedersen in the manner set forth above for at least the purpose of using a well known and established method of holding a die stack.

Regarding claim 7, Pedersen fails to teach the temporary holding surface is a wafer, however the use of wafers are common in die transfer processes. The examiner takes official notice that wafers were known to be used as a temporary holding surfaces of die stacks at the time of applicant's invention.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of what is well known in the art into the method of Pedersen by using a wafer for holding a die stack. The ordinary artisan would have been motivated to modify Pedersen in the manner set forth above for at least the purpose of using a well known and established method of holding a die stack.

Regarding claim 17, Pedersen discloses the method as set forth in claim 1, comprising the acts of:

Applying a first adhesive between each die in the die stack [column 9, line 25];
and

Applying a second adhesive between the die stack and the substrate [column 11, lines 4-6]

Pedersen fails to teach the specific temperatures at which the first and second adhesives are cured as well as the second adhesive being curable at a second temperature lower than the first temperature. However, he does disclose a 60 minute cure time for the first epoxy [column 9, line 38] and a calls the second epoxy fast curing [column 11, lines 4-6]. The 60 minute cure time along with a cool down period implies a raised temperature for curing while a fast-curing positional epoxy without any specific cure time or cool down implies the epoxy cures at room temperature which is lower than the first epoxy.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pedersen et al. (US Pat. #5675180) in view of Huang et al. (US Pat. #6753205).

Regarding claim 10, Pedersen fails to teach a die stack formed in a shingled configuration. However, Huang discloses an integrated circuit package with a shingled configuration [fig. 2 and 5].

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Huang into the method of Pedersen by stacking the chips in a shingled configuration. The ordinary artisan would have been motivated to modify Pedersen in the manner set forth above for at least the purpose of

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being able to package integrated circuit chips of various relative sizes [column 2, lines 45-47].

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1,5,7-9 and 11-16 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 6682955. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of patent '955 encompass the same scope as the cited claims of the instant application.

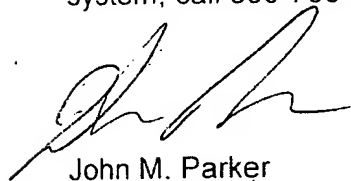
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches similar method to those instantly claimed.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Parker whose telephone number is 571-272-8794. The examiner can normally be reached on Monday - Friday 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John M. Parker



George Fourson
Primary Examiner